

Asiatic Species of the Genus *Micranthes* Haw. (*Saxifragaceae*)

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(Accepted on May 1, 2012)

Recent studies reveal section *Micranthes* to be isolated from the remaining sections of *Saxifraga* (*Saxifragaceae*) and support the generic separation of *Micranthes*. In this paper new names for 11 Asiatic species, five varieties, and one form are proposed in *Micranthes*: *Micranthes dungbooi* (Engl. & Irmsh.) Gornall & H. Ohba, *M. fusca* (Maxim.) S. Akiyama & H. Ohba, *M. fusca* var. *kikubuki* (Ohwi) S. Akiyama & H. Ohba, *M. fusca* var. *kiusiana* (H. Hara) S. Akiyama & H. Ohba, *M. japonica* (H. Boissieu) S. Akiyama & H. Ohba, *M. kermodei* (H. Sm. ex Wadhwa) Gornall & H. Ohba, *M. laciniata* (Nakai & Takeda ex Nakai) S. Akiyama & H. Ohba, *M. laciniata* f. *takedana* (Nakai) S. Akiyama & H. Ohba, *M. manchuriensis* (Engl.) Gornall & H. Ohba, *M. nelsoniana* var. *reniformis* (Ohwi) S. Akiyama & H. Ohba, *M. nelsoniana* var. *tateyamensis* (H. Ohba) S. Akiyama & H. Ohba, *M. oblongifolia* (Nakai) Gornall & H. Ohba, *M. pallida* var. *yunnanensis* (Franch.) Gornall & H. Ohba, *M. paludosa* (J. Anth.) Gornall & H. Ohba, *M. pluviarum* (W. W. Sm.) Gornall & H. Ohba, *M. rubriflora* (H. Sm.) Gornall & H. Ohba, *M. sachalinensis* (F. Schmidt) S. Akiyama & H. Ohba.

Key words: Asian flora, Flora of Japan, *Micranthes*, new botanical names, nomenclature, *Saxifraga*.

Saxifraga (*Saxifragaceae*), estimated to contain 400 or more species, has been comprehensively studied by Engler (1872, 1891), Engler and Irmshcher (1916, 1919), Gornall (1987a), Pan (1992), and others since the time of Linnaeus and has been treated differently based mostly on morphology and cytology (e.g., Haworth 1812, Seringe 1830, Small and Rydberg 1905, Losina-Losinskaja 1928, Löve 1983, Elvander 1984, Webb and Gornall 1989, Brouillet and Elvander 2009). The broad Linnaean concept of the genus was accepted by most recent authors,

but molecular phylogenetic data (summarized by Soltis et al. 2001) show that the traditional concept of *Saxifraga* is polyphyletic and should be divided into two main groups, *Saxifraga* in the narrow sense and *Micranthes* Haw. *Micranthes* differs morphologically from *Saxifraga* (s. str.) in usually having basal leaves containing crystals, leafless flowering stems, ribbed seeds, unitegminate ovules (except for *M. merkii* and *M. tolmiei*), and pollen with reticulate exine (Gornall 1987b, Ferguson and Webb 1970, Brouillet and Elvander 2009).

In the treatment of *Saxifraga* (s. lat.) for the English edition of the Flora of China, Pan et al. (2001) retained *Micranthes* within *Saxifraga*. In the Flora of Nepal, Akiyama and Gornall (2011) adopted the generic concept of *Micranthes*.

In Japan, Hara (1939) used a broad concept for *Saxifraga* in which *Micranthes* was treated as a subgenus. Hara, however, made some provisional new combinations under *Micranthes*. Under the *International Code of Botanical Nomenclature* (McNeill et al. 2006) those names are not validly published (Article 34.1).

In 2007, Gornall and Ohba (in Brouillet and Gornall 2007) proposed some new combinations for *Micranthes* in the Russian Far East and in Alaska.

In this paper we propose additional new combinations for species and infraspecific taxa of *Micranthes* in Asia.

Micranthes Haw., Syn. Pl. Succ.: 320 (1812).

Type: *Micranthes semipubescens* Haw.

1. ***Micranthes dungbooi*** (Engl. & Irmsch.) Gornall & H. Ohba, comb. nov.

Saxifraga dungbooi Engl. & Irmsch. Bot. Jahrb. Syst. **50** (Beibl. 114): 39 (1914), as "*Dungbooi*."

Type: CHINA. Xizang: Süd-Tibet, Phari (G. King 4552, B-syntype, ?destroyed); same locality (Dungboo s.n., B-syntype, ?destroyed).

2. ***Micranthes fusca*** (Maxim.) S. Akiyama & H. Ohba, comb. nov.

Saxifraga fusca Maxim. in Bull. Acad. Imp. Sci. St.-Petersb. **18**: 38 (1872).

Type: JAPAN. In insula Yezo, in silvis umbrosis frondosis ad lacum Konoma (C. J. Maximowicz s.n., LE-lectotype [by Vinogradova]).

Japanese name: Ezo-kurokumo-sô.

2b. ***Micranthes fusca*** var. ***kikubuki*** (Ohwi) S. Akiyama & H. Ohba, comb. nov.

Saxifraga fusca Maxim. var. *kikubuki* Ohwi in Acta Phytotax. Geobot. **1**: 50 (1932).

Saxifraga fusca Maxim. subsp. *kikubuki* (Ohwi) Kitam. in Acta Phytotax. Geobot. **20**: 200 (1962).

Type: JAPAN. Honshu, Prov. Shinano, Mt. Yatsugatake (J. Ohwi 7899, KYO-holotype).

Japanese name: Kurokumo-sô.

2c. ***Micranthes fusca*** var. ***kiusiana*** (H. Hara) S. Akiyama & H. Ohba, comb. nov.

Saxifraga fusca Maxim. var. *kiusiana* H. Hara in Nakai & Honda, Nova Fl. Jap. **3**: 67 (1939).

Type: JAPAN. Kyushu, Prov. Buzen, Mt. Inugatake (K. Nakajima s.n., TI-holotype).

Japanese name: Nangoku-kurokumo-sô.

3. ***Micranthes japonica*** (H. Boissieu) [H. Hara in Nakai & Honda, Nova Fl. Jap. **3**: 71 (1939), pro. syn.] S. Akiyama & H. Ohba, comb. nov.

Saxifraga japonica H. Boissieu in Bull. Herb. Boissier **5**: 687 (1897).

Type: JAPAN. Hokkaido, Shari (U. Faurie 5521, P-syntype; Mt. Karibasan (U. Faurie 8277, P-syntype); Shikoku, Mt. Tsurugizan (U. Faurie 13711, 15451, P-syntypes).

Japanese name: Fuki-yukinoshita.

4. ***Micranthes kermodei*** (Harry Sm. ex Wadhwa) Gornall & H. Ohba, comb. nov.

Saxifraga kermodei Harry Sm. ex Wadhwa, Kew Bull. **38**: 487 (1983).

Type: BURMA. Myitkyina, Laikam-Humyetang Rd., 2130–2440 m (C. W. D. Kermode 17094, 22 April 1938, K-holotype).

5. ***Micranthes laciniata*** (Nakai & Takeda) [H. Hara in Nakai & Honda, Nova Fl. Jap. **3**: 74 (1939), nom. prov.] S. Akiyama & H. Ohba, comb. nov.

Saxifraga laciniata Nakai & Takeda in Nakai in Bot. Mag. (Tokyo) **28**: 305 (1914).

Type: NORTH KOREA. Mount Paiktusan (Paishan) (H. E. M. James s.n., K-holotype).

Japanese name: Kumoma-yukinoshita, Himeyamahana-sô.

Saxifraga laciniata was published in 1914

with the briefest of validating descriptions in a commentary under *S. takedana* Nakai, with which it was compared. The key passage from this commentary runs “Habitus nostrae *S. laciniatae* tamen tantisper discrepans. Nulli soboles emittit et acaulis est.” A more complete description of the species was subsequently provided by Takeda (1915: 235–236).

5b. *Micranthes laciniata* f. *takedana* (Nakai) S. Akiyama & H. Ohba, comb. nov.

Saxifraga takedana Nakai in Bot. Mag. (Tokyo) **28**: 305 (1914).

Saxifraga laciniata Nakai & Takeda f. *takedana* (Nakai) Toyok. in J. Asahikawa Univ., no. 3: 158 (1975).

Type: NORTH KOREA. In planitie vulcani pede montis Paiktusan (T. Mori 50 [a part], TI–holotype).

Japanese name: Tsuru-kumoma-gusa.

6. *Micranthes manchuriensis* (Engl.) Gornall & H. Ohba, comb. nov.

Saxifraga punctata Linnaeus var. *manchuriensis* Engl., Monogr. *Saxifraga*, 139 (1872).

Type: RUSSIA. An der Küste der Mandschurei (C. Wilford s.n., B–holotype, ?destroyed; K–isotype).

7. *Micranthes nelsoniana* (D. Don) Small var. *reniformis* (Ohwi) S. Akiyama, & H. Ohba, comb. nov.

Saxifraga reniformis Ohwi in Acta Phytotax. Geobot. **2**: 25 (1933).

Saxifraga nelsoniana D. Don subsp. *reniformis* (Ohwi) Hultén in Bot. Not. **126**: 494 (1973).

Saxifraga nelsoniana D. Don var. *reniformis* (Ohwi) H. Ohba in J. Jap. Bot. **68**: 337 (1993).

Type: RUSSIA. Sakhalin. Mt. Tosso (J. Ohwi s.n., KYO–holotype).

Japanese name: Chishima-iwabuki.

7b. *Micranthes nelsoniana* var. *tateyamensis* (H. Ohba) S. Akiyama & H. Ohba, comb. nov.

Saxifraga nelsoniana D. Don var. *tateyamensis* H. Ohba in J. Jap. Bot. **68**: 337 (1993).

Type: JAPAN. Honshu, Toyama Pref., Tsurugi in mt. Tateyama Range, alt. 2700 m (Y. Doi s.n., TI–holotype).

Japanese name: Tateyama-iwabuki.

8. *Micranthes oblongifolia* (Nakai) Gornall & H. Ohba, comb. nov.

Saxifraga oblongifolia Nakai in J. Coll. Sci. Tokyo **26**(1): 218, t. 11 (1909).

Type: KOREA. Kang-uön, Mt. Kum-gang-san (T. Uchiyama s.n., 18 Aug. 1902, TI–holotype; TI–isotype).

9. *Micranthes pallida* (Wall. ex Sér.) Losinsk. var. *yunnanensis* (Franch.) Gornall & H. Ohba, comb. nov.

Saxifraga micrantha Edgew. var. *yunnanensis* Franch. in J. Bot. (Morot) **10**: 263 (1896).

Type: CHINA. Yunnan: In rupibus montis Tsang-chan supra Tali [Dali], prope cacumina (J. M. Delavay 68, 4 Aug 1884, P–lectotype, here designated, specimen with original field label and description of habitat and flower color; K, P–isolectotypes [four specimens]).

In the protologue, Franchet cited one gathering, J. M. Delavay 68, but he did not specify the herbarium where it is preserved, nor how many duplicate specimens it comprises. A lectotype is here designated from among the several specimens of this gathering in Delavay’s primary set of duplicates at P.

10. *Micranthes paludosa* (J. Anth.) Gornall & H. Ohba, comb. nov.

Saxifraga paludosa J. Anth. in Notes Roy. Bot. Gard. Edinb. **18**: 24 (1933).

Type: CHINA. Sichuan: Glacier lake camp. Lat. 28°5′ N. Long. 100°45′ E. Alt. 13–14,000 ft. (F. Kingdon Ward 4641, Jul 1921, E–holotype).

The protologue and label both give the type locality as being in Yunnan Province, but maps show the coordinates as being in Sichuan.

11. *Micranthes pluviarum* (W. W. Sm.)
Gornall & H. Ohba, comb. nov.

Saxifraga pluviarum W. W. Sm. in Rec. Bot.
Surv. India 4: 368 (1913).

Type: INDIA. Sikkim, Chola Range, Tosa (W.
W. Smith & Lepcha 3985, CAL–holotype).

12. *Micranthes rubriflora* (Harry Sm.)
Gornall & H. Ohba, comb. nov.

Saxifraga rubriflora Harry Sm. in Bull. Brit.
Mus. (Nat. Hist.) Bot. 2: 229, t. 13A (1960).

Type: BHUTAN. Omta Tso (Ludlow, Sherriff
& Hicks 17099, BM–holotype).

13. *Micranthes sachalinensis* (F. Schmidt)
[H. Hara in Nakai & Honda, Nova Fl. Jap. 3: 72
(1939), nom. pro.] S. Akiyama & H. Ohba, comb.
nov.

Saxifraga sachalinensis F. Schmidt, Reis.
Amur-Land., Bot.: 133 (1868).

Type: RUSSIA. N. and C. Sakhalin. An
Felsenmier und da; Kap Choindschu bei Dui (P.
von Glehn s.n., LE–lectotype).

Japanese name: Yamahana-sō.

14. *Micranthes zekoensis* (J. T. Pan) Gornall
& H. Ohba, comb. nov.

Saxifraga zekoensis J. T. Pan in Acta
Phytotax. Sin. 16(2): 21, f. 6 (1978).

Type: CHINA. Qinghai: Zeku, 3000 m (Y. C.
Yang 2017, HNWP–holotype).

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秋山 忍^a, R. J. Gornall^b, 大場秀章^c: 日本のチシマイワブキ属の学名

チシマイワブキとその近縁種について、原 (1939) はユキノシタ属の亜属、チシマイワブキ亜属 subgenus *Micranthes* として分類する見解を発表した。このグループは、葉に蔕酸カルシウムの結晶があり、花粉表面 (exine) は網目状となり、珠皮が 1 枚であるなど、ユキノシタ属の他の種とは異なる属性をもっている。DNA を用いた系統解析によって Soltis ら (2001) はこのグループがユキノシタ属 (狭義) ではなく、アメリカ産の単型属 *Cascadia* および *Saxifragodes* と単系統となることを示した。

著者らは最近北アメリカや中国、ネパールのユキノシタ属 (広義) について研究し、チシマイワブキ亜属を独立した属として扱うのが良いと結論し、北アメリカやネパール植物誌ではその見解にもとづいて学名を整理した。この論文では日本を含むアジア産 11 種 5 変種 1 品種についてチシマイワブキ属での学名を提唱した。

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